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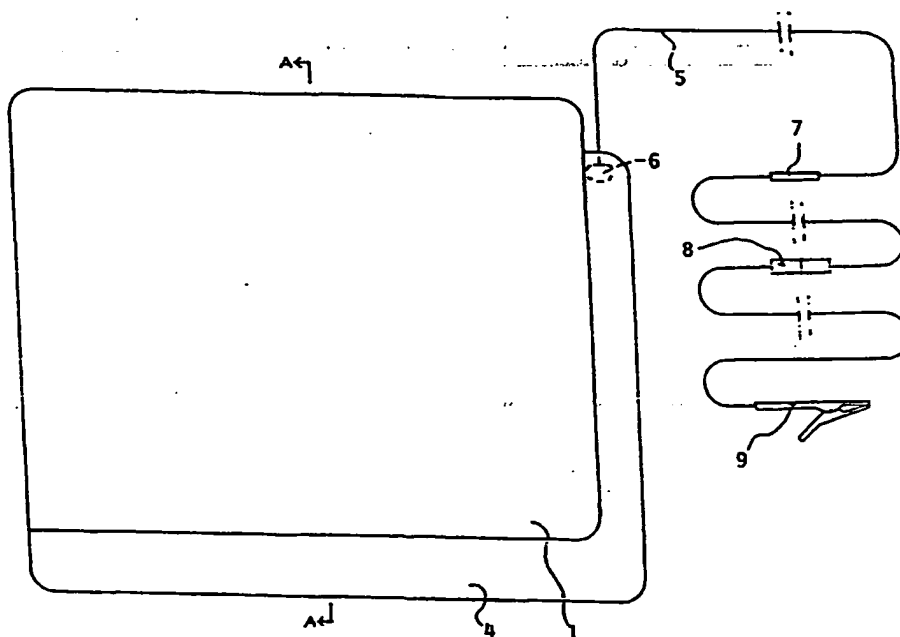
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: <b>PCT/SE94/00194</b> (22) International Filing Date: <b>8 March 1994 (08.03.94)</b> (30) Priority Data: <b>9300783-9</b> <b>10 March 1993 (10.03.93)</b> <b>SE</b> (71)(72) Applicant and Inventor: <b>ALM, Anders [SE/ES]; Apartado 177, Mas Palomas, Gran Canaria (ES).</b> (74) Agent: <b>NORÉN, Per, Bo, Arne; Swedpatent AB, P.O. Box 186, S-746 24 Bålsta (SE).</b>	(81) Designated States: <b>CA, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</b> Published <i>With international search report.</i> <i>In English translation (filed in Swedish).</i>	

(54) Title: **MOUSE PAD HAVING PROPERTIES REDUCING THE RISK OF STATIC CHARGE**

## (57) Abstract

A mouse pad, intended to serve as an underlay used when working with an input means in form of a mouse connected to a computer, comprising a supporting member of cellular rubber or similar elastic material with a work surface of a thin textile mat (1) or similar material with good frictional properties. According to the invention, the supporting member comprises a lower layer extending in at least one direction away from the work surface (1), a second layer (2) of the supporting member being arranged intermediately between the lower layer and the work surface (1) having a configuration and extension substantially corresponding to the work surface (1), and with a layer of an



electrically conductive material (4) arranged applied against the portion of the supporting lower layer that extends outside the work surface (1), the layer of an electrically conductive material (4) being arranged to facilitate earth connection to an earth point by means of an earth wire (5). The layer of an electrically conductive material (4) is advantageously arranged substantially L-shaped, arranged to form a forward surface in an intermediate position between the work surface (1) and the user and as side surface adjacent to the work surface (1), the lower supporting layer (3) being arranged extending in a substantially corresponding way from the work surface (1).

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Mouse pad having properties reducing the risk of static charge

The present invention relates to a so called mouse pad, i.e. an underlay as used when working with an input means in form  
5 of a mouse connected to a computer.

Mouse pads were originally used in the form of a square or rectangular sheet, manufactured from a relatively hard type of rubber or plastic. These materials do not always result in  
10 desired frictional properties when contacting the ballshaped member which in a mouse senses relative movements of the mouse in relation to the mouse pad, and lately mouse pads having a thin textile mat joined to an underlying layer of cellular rubber have been developed. These have a considerably improved  
15 frictional contact with the normally rubbercovered ballshaped member of a mouse, but involve a risk for creation of a statical charge when the hand that moves the mouse rubs against the textile mat. To apply an electrically conductive layer, e.g. a metal foil connected to earth, between the layer  
20 of cellular rubber and the thin textile mat, results in a negative influence for existing elastic properties of the cellular rubber layer, and constitutes thus not a suitable solution to the problem of static charge generation during transfer movements of the mouse on the mouse pad.

25

The object of the present invention is to disclose an improved mouse pad, which eliminates the risk for static charging, but which maintains the desired properties obtained with a combination of an elastic cellular rubber backing directly joined  
30 to a thin textile mat..

The mouse pad according to the present invention comprises a supporting member of cellular rubber or similar elastic material with a work surface of a thin textile mat or similar  
35 material with good frictional properties, and is mainly characterized in that the supporting member comprises a lower layer extending in at least one direction away from the work surface, that a second layer of the supporting member is

arranged intermediately between the lower layer and the work surface having a configuration and extension substantially corresponding to the work surface, and that a layer of an electrically conductive material is arranged applied against  
5 the portion of the supporting lower layer that extends outside the work surface, the layer of an electrically conductive material being arranged to facilitate earth connection to an earth point by means of an earth wire.

10 A non-restricting example of an embodiment of a mouse pad according to the invention will now be more fully described with reference to the accompanying drawing, in which:-

Fig. 1 shows a plan view of an embodiment of a mouse pad  
15 according to the invention viewed from above; and

Fig. 2 shows a cross-sectional view of the mouse pad shown in Fig. 1, viewed in the direction of the arrows A - A.

20 With reference to Fig. 1, an embodiment of a mouse pad according to the present invention is shown, viewed with regard to the surface which is turned away from a table or other supporting surface onto which the mouse pad is placed.

25 The mouse pad has a rectangular work surface, which comprises a thin textile mat 1 joined to an underlying member of cellular rubber 2 having an extension corresponding to the textile mat 1 (see Fig. 2). The underlying member 2 is joined to a supporting member of cellular rubber 3 having an ex-  
30 tension and outer configuration corresponding to the entire mouse pad as shown in Fig. 1. The textile mat 1 is surrounded on two sides, which when used constitute the front and the right hand sides, by a substantially L-shaped member 4 of electrically conductive rubber, joined to the supporting  
35 member 3 and having a thickness substantially corresponding to the member 2 underlying the textile mat 1. Adjacent to the rear end portion of the L-shaped member 4 is an earth wire connected, e.g. by connection of same to a small piece of a

thin metal foil 6, located between the supporting member of cellular rubber 3 and said end portion of the L-shaped member 4, and in an electrically conductive contact with the last mentioned member.

5

A first part of the earth wire 5 includes an electrical resistor 7, and by means of a male/female connector 8 connected to a second part, which is terminated by means of a so called crocodile contact 9, intended to be attached against a  
10 suitable earth point, e.g. a radiator in a water carried heating system.

Practical tests have shown, that the normal user, provided that he is right-handed, during his operation of a moving a  
15 mouse, substantially continuously obtains contact with either the front surface or the right hand surface of the L-shaped member 4. This will result in a discharge of static electricity via the earth wire 5 to the earth point. Furthermore, the L-shaped member 4 also has its internal edge portions in  
20 contact with the textile mat 1 (the work surface), which further causes electric discharge of generated static electricity.

Furthermore, that the work surface is maintained designed in  
25 the most favourable fashion, i.e. only comprising a supporting member of cellular rubber 2, 3 with a directly attached thin textile mat 1, results in that the work surface obtains best possible contact and frictional properties during use. The mouse pad will also receive an aesthetically attractive design  
30 due to the L-shaped member 4.

An example of suitable dimensions for the example of an embodiment shown in Fig. 1 and 2 can be given as follows, namely that the supporting member of cellular rubber is  
35 arranged having a thickness of 3 mm, that the member of cellular rubber underlying the textile mat 1 is arranged having a thickness of 2 mm, and that also the L-shaped member 4 is arranged having a thickness of 2 mm. The thickness of the

textile mat can be regarded as almost non-existing, i.e. one or a few tenths of a millimeter, which means that the mouse pad in its entirety obtains substantially the same thickness, or with the textile mat 1 work surface in a slightly higher 5 plane than the surrounding L-shaped member 4.

The L-shaped member 4 can obviously also be arranged extending along the forward and lefthand side of the mouse pad, in order to be better adapted for lefthanded users. By arranging same 10 U-shaped, i.e. extending along both the left, the right and the forward edge portions, a mouse pad suited for both left- and righthanded can be achieved. The L-shaped member 4 can obviously also be arranged as a surrounding frameshaped member around the textile mat 1, even though the rear portion in 15 relation to the user does not result in any particular advantages. Within the scope of the invention is also an embodiment in which the L-shaped member 4 comprises a substantially straight member, located by the forward edge portion of a mouse pad in relation to a user.

20

The various parts of the mouse pad can be internally joined by means of a glue or other suitable and previously known method. Furthermore, the work surface may have a different configuration, e.g. square.

25

The described and shown embodiment of a mouse pad according to the invention facilitates thus simple and low-cost manufacture, while maintaining best possible contact and frictional properties within the work surface, and with good dissipation 30 of static electricity. As previously mentioned, the mouse pad according to the invention can also be modified in a number of ways, in order to be adapted for use by both lefthanded and righthanded users. The materials stated, such as for example cellular rubber, electrically conductive rubber and textile 35 mat, can obviously be varied and substituted by other materials having similar properties.

The mouse pad according to the present invention is thus in no

way restricted to the example of embodiment shown and described, but can be further varied within the scope of the inventive thought and the following claims.



C L A I M S

1. Mouse pad, comprising a supporting member of cellular rubber (2, 3) or similar elastic material with a work surface  
5 of a thin textile mat (1) or similar material with good frictional properties, c h a r a c t e r i z e d i n, that the supporting member comprises a lower layer (3) extending in at least one direction away from the work surface (1), that a second layer (2) of the supporting member is arranged in-  
10 termediately between the lower layer (3) and the work surface (1) having a configuration and extension substantially corresponding to the work surface (1), and that a layer of an electrically conductive material (4) is arranged applied against the portion of the supporting lower layer (3) that  
15 extends outside the work surface (1), the layer of an electrically conductive material (4) being arranged to facilitate earth connection to an earth point by means of an earth wire (5).

20 2. Mouse pad according to claim 1, c h a r a c t e r i z e d i n, that the layer of an electrically conductive material (4) is arranged substantially L-shaped, arranged to form a forward surface in an intermediate position between the work surface (1) and the user and a side surface adjacent to  
25 the work surface (1), and that the lower supporting layer (3) is arranged extending in a substantially corresponding way from the work surface (1).

3. Mouse pad according to claim 1, c h a r a c t e r i z e d i n, that the layer of an electrically conductive material (4) is arranged substantially U-shaped, arranged to form a forward surface in an intermediate position between the work surface (1) and the user and two side surfaces adjacent to the work surface (1), and that the lower supporting layer  
35 (3) is arranged extending in a substantially corresponding way from the work surface (1).

4. Mouse pad according to claim 1, c h a r a c t e r i -

z e d i n, that the layer of an electrically conductive material (4) is arranged to form a frameshaped surrounding member to the work surface (1), and that the lower supporting layer (3) is arranged extending in a substantially corresponding way from the work surface (1).

5. Mouse pad according to any one of claims 1 - 4, characterized in, that the earth wire (5) is connected to the layer of an electrically conductive material (4) at a region located intermediately between said layer (4) and the supporting lower layer (3).

6. Mouse pad according to claim 5, characterized in, that the connection of the earth wire (5) to the layer of an electrically conductive material (4) comprises of a small metal foil member (6), electrically connected to the earth wire (5) and in intimate contact with the layer of an electrically conductive material (4).

7. Mouse pad according to any one of claims 1 - 6, characterized in, that the lower layer of the supporting member (3), the work surface (1) and intermediately located second layer (2) are arranged having a total thickness substantially corresponding to or slightly exceeding the total thickness of the lower layer of the supporting member (3) and onto same attached layer of an electrically conductive material (4).

8. Mouse pad according to any one of claims 1 - 7, characterized in, that the earth wire (5) includes an electrical resistor (7).

9. Mouse pad according to any one of claims 1 - 8, characterized in, that at least part of the edge portion of the layer of an electrically conductive material (4) directed towards the work surface (1) is in electrical contact with adjacent edge portion of the material of the work surface (1).

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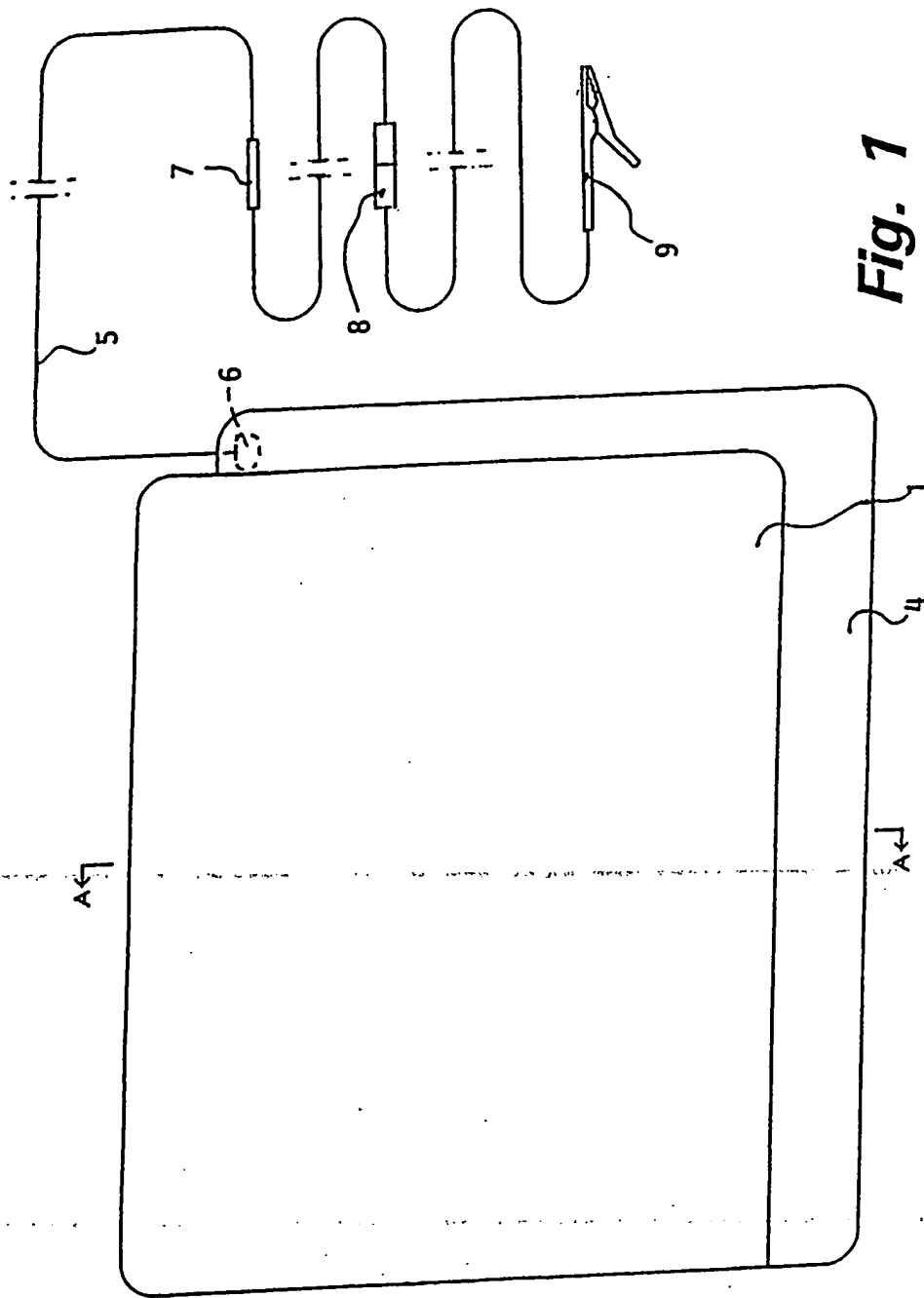


Fig. 1

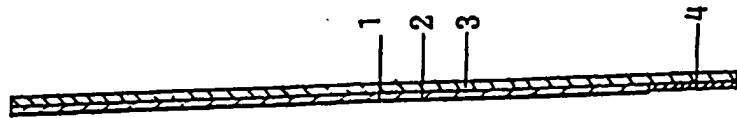


Fig. 2

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 94/00194

## A. CLASSIFICATION OF SUBJECT MATTER

IPC : B32B 3/10, B32B 27/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC : B32B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DERWENTS WORLD PATENT INDEX

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP, A1, 0328225 (KUPACK PLASTICS V.O.F.), 16 August 1989 (16.08.89), see the whole document  -----	1-9

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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